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ABSTRACT

This annotated bibliography contains information about technology education primarily for the middle, junior, and senior high school levels. Major themes include the shift from industrial to technology education that has occurred in recent years, the rationale behind this shift, and the importance of technological literacy. Programs and instructional materials developed for "Technology Education" are also cited. Citations include administrative material, journal articles, learning activities, opinion papers, project descriptions, reports, task analyses, teaching guides, and textbooks. Materials included in this bibliography were located through Florida Educational Information Service (FEIS), which conducted searches of computerized information retrieval systems and contacted commercial publishers, curriculum centers, and professional associations. A listing of additional learning resources is provided following the bibliography. (NLL)

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Technology Education

A Bibliography

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Technology Education

A Bibliography

State of Florida
Department of Education
Tallahassee, Florida
Betty Castor, Commissioner
Affirmative action/equal opportunity employer

Division of Vocational, Adult, and Community Education

December 1988

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Introduction

This bibliography contains information about technology education primarily for the middle, junior, and senior high school levels. Major themes include the shift from industrial to technology education that has occurred in recent years, the rationale behind this shift, and the importance of technological literacy. Programs and instructional materials developed for *Technology Education* are also cited. A listing of additional learning resources is provided following the bibliography.

Citations include administrative material, journal articles, learning activities, opinion papers, project descriptions, reports, task analyses, teaching guides, and textbooks.

Materials for inclusion in this bibliography were located through Florida Educational Information Service (FEIS). FEIS (1) conducted searches of computerized information retrieval systems (specifically the ERIC—Educational Resources Information Center—data base on DIALOG, the RIVE—Resources in Vocational Education—data base, and the VECM—Vocational Education Curriculum Materials—data base on BRS—Bibliographic Retrieval Service) and (2) contacted commercial publishers, curriculum centers, and professional associations.

FEIS is sponsored by the Florida Division of Vocational, Adult, and Community Education and is located in the Center for Instructional Development and Services, Florida State University.

For additional search information, contact Florida Educational Information Service, Center for Instructional Development and Services, 2003 Apalachee Parkway, Suite 301, Tallahassee, FL 32301-4829, (904) 487-2054.

NOTE: In production at the time that this bibliography was being compiled were a V-TECS catalog, a V-TECS curriculum guide, and a V-TECS test item bank—all titled *Introduction to Technology*. Refer questions about *Introduction to Technology* to Dissemination and Diffusion Unit; Division of Vocational, Adult, and Community Education; Department of Education; Knott Building; Tallahassee, FL 32301-8101; (904) 488-0405.

Notes for reading an entry. The records listed in this bibliography have been selected and reproduced as written by data base developers. No further editing of the texts was done.

Microfiche copies of ERIC documents are available through FEIS. To order these microfiche documents, use the order number found in the "Availability" field of certain entries. Microfiche documents may be ordered at a cost of 30 cents per sheet. Each sheet contains up to ninety-six pages of printed copy.

TITLE **"An Agenda for Progress in Technology Education: A Personal View."**

AUTHOR Swyt, Dennis A

JOURNAL *Technology Teacher*, v47 n1 p3-8 Sep-Oct 1987.

ANNOTATION The author discusses the importance of technical education to the future workplace. He presents a potential organizing framework for the study of technology. (CH)

TITLE ***Arizona Industrial Arts Manufacturing Technology. Teacher's Curriculum Guide.***

DATE 1987

AUTHOR Miller, Milton, And Others

ANNOTATION This curriculum guide is intended to assist junior and senior high school vocational instructors in presenting a course in manufacturing technology. The package contains a competency/skill and task list, an instructor's guide, and a bibliography. The following competencies are covered: the historical development of manufacturing (the interchangeability of parts, mass production, and the relationship between the economic system and manufacturing); manufacturing and the environment (energy sources, natural and synthetic materials used in manufacturing, plastics, the role of research and development, pure versus applied research, and major manufacturing resources); manufacturing in the future (space-related products, new product research, environmental considerations, automation, computer-aided manufacturing and computer-aided design, human resources, communications technology, and career plans); personnel in technology (the work ethic, employers' and employees' responsibilities to one another, considerations in establishing a worker training program, organized labor and collective bargaining, open and closed shops, labor legislation); industrial arts student associations; manufacturing in technology, management technology; and manufacturing enterprises. Each chapter in the instructor's guide contains introductory concept information and a series of competency sheets. Each competency sheet contains a competency statement, instructor information, and three levels of instructor activities. (MN)

FORMAT Teaching Guide, 186p.

AVAILABILITY For a microfiche copy of this document order ED287037 from FEIS.

TITLE **"The Autonomy of Technology: A Challenge to Education."**

AUTHOR Waetjen, Walter B.

JOURNAL *Technology Teacher*, v46 n6 p7-8, 10-11, 13-14 Mar 1987.

ANNOTATION The author discusses the need for technological literacy for future citizens. He argues that technology should be emphasized throughout the curriculum. Recommendations are presented. (CH)

TITLE **"British Technology Education: An American View."**

AUTHOR Hutchinson, John

JOURNAL *Technology Teacher*, v46 n3 p13, 15-18 Dec 1986.

ANNOTATION The author describes the British Craft, Design, and Technology (CDT) curriculum, which is comparable to American technology education. According to the author, CDT is characterized by creative thinking and experimentation. He states, however, that little national coordination or cooperation is evident. (CH)

TITLE ***Computer Utilization in Industrial Arts/Technology Education. Curriculum Guide.***

DATE 1986

DEVELOPER Connecticut State Dept. of Education, Hartford. Div. of Vocational, Technical, and Adult Education.

ANNOTATION This guide is intended to assist industrial arts/technology education teachers in helping students in grades K-12 understand the impact of computers and computer technology in the world. Discussed in the introductory sections are the ways in which computers have changed the face of business, industry, and education and training; the scope and sequence of industrial arts from the elementary through the secondary grades with specific guidelines for each grade level; the goals and provisions of the Education for All Handicapped Children Act; and the purpose and organization of the guide. The second major section consists of computer study and applications units on the following topics: history and development of computers; principles of computer systems; computer-aided design/drafting (CAD); computer graphics; computer-aided manufacturing (CAM) and computer-integrated manufacturing (CIM); microprocessors; robotics; telecommunications; computer-assisted instruction (CAI); data management; and careers. Presented next is an implementation-suggestion matrix that proposes a wide variety of ways in which computer use might be integrated into industrial arts programming. Hardware system configurations for a general-use computer station are outlined. Appendixes to the guide include lists of related periodicals, software resources, and software evaluation criteria; a glossary; and a bibliography. (MN)

FORMAT Teaching Guide, 160p.

AVAILABILITY For a microfiche copy of this document order ED275828 from FEIS.

TITLE **"Conceptualizing the Technology Education Curriculum."**

AUTHOR Zuga, Karen F.

JOURNAL *Journal of Epsilon Pi Tau*, v13 n1 p50-58 Win-Spr 1987.

ANNOTATION The author describes a naturalistic study of technology education curriculum redesign efforts in a suburban midwestern school district. She examines (1) debated ideas and concepts, (2) stages of discussion, and (3) influence of teacher educators. (CH)

TITLE **"Curriculum Politics: Methods for Implementing New Curriculum Methods."**

AUTHOR Savage, Ernest; Skolnick, Marty

JOURNAL *Technology Teacher*, v45 n3 p29-31 Dec 1985

ANNOTATION The authors state that the change process, and especially the need for continual change in technology education (industrial arts), must be taught during the teacher training period. Inservice programs and workshops are cited as excellent methods of curriculum innovation dissemination. Engineers and technicians serving as consultants are also recommended. (CT)

TITLE **"Defining a Role for Industrial Arts in Technology Education."**

AUTHOR Martin, G. Eugene

JOURNAL *Journal of Epsilon Pi Tau*, v11 n1-2 p37-40 Win-Spr, Sum-Fall 1985

ANNOTATION The author argues that industrial arts/technology education must assume a more significant role in the educational arena. The profession must operate in tandem with other subject matter areas to develop and reinforce those commonly accepted process skills. The nature of instruction must focus on the overriding societal issues of a given area. (CT)

TITLE ***Development of Junior High School Technical Education Curriculum.***

DATE 1986

DEVELOPER Haddon Township Board of Education, MacArthur Boulevard and Rhoads Avenue, Westmont, NJ 08108 (609) 854-6525

ANNOTATION Development of a technical education curriculum for Haddon Township Junior High will begin with a review of curricula being developed in other states to determine what might be applicable. Junior high faculty will receive in-depth training in technology education. Curriculum will then be developed for grades 7 and 8. Modules will be edited, reviewed, and revised, and the curriculum will be implemented. A lab facility will also be planned and organized to house the 7th and 8th grades.

FORMAT Project Description

TITLE ***Differentiating between Science and Technology.***

DATE 1985

AUTHOR DeVore, Paul W.

ANNOTATION The confusion concerning the meaning of the terms science and technology is readily apparent in the literature of various study groups concerned with the issue of technological literacy, including researchers working in the fields of mathematics, engineering, and education. The literature would suggest that rather than one relationship between science and technology, there are many. These fields are mutually exclusive and not mutually dependent, although each has been enhanced by contributions of the other. Generally, if the scope of a problem is clearly defined as solving a human or social problem within a specified environment, then the activity is technological. If, on the other hand, the goal of the problem does not restrict the scope of the results sought or the direction of inquiry, then, in most cases, the activity is scientific. Practitioners designing technological literacy programs would do better to avoid the seemingly unresolvable controversy over the difference between science and technology and concentrate instead on determining what constitutes the science of technology. It is proposed that technology be viewed as a science that deals with the creation, utilization, and behavior of adaptive systems in relation to human beings, society, and the environment. (MN)

FORMAT Conference Paper; Position Paper; 29p.

AVAILABILITY For a microfiche copy of this document order ED265407 from FEIS.

TITLE ***Diversified Technology. Year Two.***

DATE 1987

PROJECT DIRECTOR Moses, Napoleon. PHONE: (601) 325-2510. Mississippi State Department of Education, Research and Curriculum Unit, Drawer DX, Mississippi State, MS 39762

ANNOTATION Curriculum development for the diversified technology curriculum will be continued, based on objectives outlined for the first year of the curriculum. In addition, instructors will be prepared for implementing the second year curriculum through an institute or workshop. Procedures will include revising the self-paced, competency-based modules which were field-tested during FY 86. Twenty modules with accompanying videotapes will be developed for the second year curriculum and will be field-tested in the fall of 1987. Task analyses will be conducted to determine technical content, sequence of learning, materials and equipment needed for achieving competencies, and level of expertise desired from students and teachers.

FORMAT Project Description

TITLE ***The Education Technology Act. Hearing before the Subcommittee on Elementary, Secondary, and Vocational Education of the Committee on Education and Labor. House of Representatives, Ninety-Ninth Congress, Second Session on H.R. 3102 (February 19, 1986).***

DATE 1987

ANNOTATION The Education Technology Act contends that technological literacy is a basic skill that should be taught in the public schools. This bill would authorize funding for fiscal year 1987 for model programs. Local educational agencies, state educational agencies, and institutions of higher education would be eligible for grants to establish demonstration programs. This act promotes the teaching of technology as part of the secondary curriculum and provides for teacher training, the development of new courses, and emphasizes hands-on experiences of technology principles. Statements contained in this report of the hearing before the House Subcommittee on Elementary, Secondary, and Vocational Education include those from (1) Forrest Brummett, past president of the Society of Manufacturing Engineers, (2) Paul DeVore, professor of technology education, West Virginia University, (3) Thomas Hughes, associate director

of technology education, Virginia Department of Education, and (4) John D. Rockefeller, IV, United States senator from West Virginia. (ML)

FORMAT: Legal Material; 60p.

AVAILABILITY: For a microfiche copy of this document order ED280732 from FEIS.

TITLE: ***Exemplary Program Criteria 1985-1986. Pennsylvania Industrial Arts Technology Education. Revised.***

DATE: 1985.

AUTHOR: Stoudt, John, And Others.

ANNOTATION: These criteria are designed for use by teachers and administrators to conduct a self-assessment of an industrial arts program for students and thus identify outstanding programs. General criteria are grouped under 12 standards: purpose, administration and supervision, learning resources, finances, instruction, equipment, facilities, instructional staff, leadership training, safety and health, record keeping and evaluation, and student populations served. Ratings are yes, no, or but, with a space for comments. It is suggested that after conducting a thorough and satisfactory self-assessment, the teacher and administrator submit the program for consideration. Specific criteria are also provided for these programs eligible for submitting an application for consideration as an exemplary program: junior high/middle school power technology, junior high/middle school industrial materials, junior high/middle school visual communications, senior high drawing/design, senior high electricity/electronics, senior high graphic arts, senior high metalworking, senior high photography, senior high power technology, and senior high woodworking. The program for which application is made must meet all general criteria and the set of specific criteria for that program. (YLB)

FORMAT: Administrative Material; Questionnaire; 62p.

AVAILABILITY: For a microfiche copy of this document order ED266330 from FEIS.

TITLE: ***Exploring Communication Technology.***

DATE: 1987.

ANNOTATION: Part of the MAVCC Technology Education series, this guide contains seven units of instruction designed to provide students with the opportunity to explore the fundamentals of message design, production, and transmission. Learning experiences include activities through electronics and verbal communication as well as drafting, photography, and reprographics.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Behavioral Objectives; Criterion-referenced Evaluation; Transparency; 318p.

AVAILABILITY: Sale, contact for price. Mid-America Vocational Curriculum Consortium, 1500 W Seventh Avenue, Stillwater, OK 74074 (800) 654-3988.

TITLE: ***Exploring Construction Technology.***

DATE: 1987.

ANNOTATION: Part of the MAVCC Technology Education series, this guide contains six units of instruction designed to provide the student with the opportunity to gain a more in-depth understanding of construction technology. Learning experiences include construction concepts and activities as well as management and production practices as they currently relate to the construction industry.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Behavioral Objectives; Criterion-referenced Evaluation; Transparency; 337p.

AVAILABILITY: Sale, contact for price. Mid-America Vocational Curriculum Consortium, 1500 W Seventh Avenue, Stillwater, OK 74074 (800) 654-3988.

TITLE: ***Exploring Energy, Power, and Transportation Technology.***

DATE: 1987.

ANNOTATION: Part of the MAVCC Technology Education series, this guide contains seven units of instruction providing an overview of the transportation industry. The emphasis is on power and energy utilization and how these systems are related to the other technology areas. Students will have experiences with power trains and small engines and will research the future trends and environmental impact of this technology system.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Behavioral Objectives; Criterion-referenced Evaluation; Transparency; 388p.

AVAILABILITY: Sale, contact for price. Mid-America Vocational Curriculum Consortium, 1500 W Seventh Avenue, Stillwater, OK 74074 (800) 654-3988.

TITLE: ***Exploring Manufacturing Technology.***

DATE: 1987.

ANNOTATION: Part of the MAVCC Technology Education series, this guide contains eight units of instruction covering manufacturing processes, organizations, and occupations. A variety of materials, tools, and processes needed in the manufacturing industry are utilized.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Behavioral Objectives; Criterion-referenced Evaluation; Transparency; 504p.

AVAILABILITY: Sale, contact for price. Mid-America Vocational Curriculum Consortium, 1500 W Seventh Avenue, Stillwater, OK 74074 (800) 654-3988.

TITLE: ***Exploring Technology Education.***

DATE: 1987.

ANNOTATION: This is the introductory Level I book in the MAVCC Technology Education series designed as a pre-vocational series for sixth- to ninth-grade students. The nineteen units of instruction give the student a fast-moving, activity-oriented overview of the four technology systems. The publication utilizes the model of input, process, output, and feedback to assist the student in developing problem-solving and decision-making skills.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Behavioral Objectives; Criterion-referenced Evaluation; Transparency; 830p.

NOTE: A video component for *Exploring Technology Education* is being developed by the Agency for Instructional Technology, Box A, Bloomington, IN 47402. Nineteen 10- to 15-minute video programs are currently scheduled.

AVAILABILITY: Sale; contact for price. Mid-America Vocational Curriculum Consortium, 1500 W Seventh Avenue, Stillwater, OK 74074 (800) 654-3988.

TITLE: ***Exploring Technology Instructional Resource Guide.***

DATE: 1982.

ANNOTATION: Provides instruction in the history of technology, including the contributions to the growth of civilization brought about by the development of tools, machines, transportation, communications, power, energy, manufacturing, and construction.

FORMAT: Curriculum Guide; Competency-based; Task Analysis; Criterion-referenced Evaluation; 164p.

AVAILABILITY: Sale, $8.90. Virginia Vocational Curriculum and Resource Center, 2200 Mountain Road, Glen Allen, VA 23060. (804) 262-7439.

TITLE: ***Field Experience in Teacher Education: A Model for Industrial Arts/Technology Education.*** **Special Publication Series No. 52.**

DATE: 1985.

AUTHOR: Clark, Donald L.

DEVELOPER: Office of Vocational and Adult Education (ED), Washington, DC.

ANNOTATION: Five exemplary university field experience programs for individuals studying to become teachers were identified and examined in order to develop a model field experience program in teacher education. Programs at the following universities were examined: Ball State University (Indiana); Illinois State University; Millersville University (Pennsylvania); the State University of New York at Oswego; and the University of Wisconsin-Stout. The model field experience program called for the following three components: 100 contact hours of early field experience (a program, consisting of highly structured yet varied experiences that are closely coordinated with each of the courses in the professional sequence); a semester-long, full-time student teaching experience (a program involving eight weeks in a junior high school and eight weeks in a senior high school setting under the supervision of full-time faculty members in the university's industrial arts or technology education department); and a first-year teacher program (a coordinated activity in which a university supervisor and a local mentor provide support to the new teacher). This report includes a detailed description of the model with information concerning the linkages, objectives, activities, and contact hours involved in each stage in the proposed field experience program. Supportive information includes comments by case study participants. (MN)

FORMAT: Research Report; 80p.

AVAILABILITY: For a microfiche copy of this document order ED268275 from ERIC.

TITLE: **"Forging a Blueprint of Action: Technology Education Takes Hold."**

AUTHOR: Pitts, Albert.

JOURNAL: *Wisconsin Vocational Educator*; v9 n3 p4-5, 19 Sum-Fall 1985.

ANNOTATION: Describes the revised industrial education program at Racine Unified School District. Goals of the program are explained: to explore the elements of industry, to prepare for entry into appropriate technology-related occupations, and to apply academic competencies to technology education courses. A flowchart for the Occupational Preparation Program—Technology Education is included. (CT)

TITLE: **"For Robotics: Slow-Scan Video, Satellite Beams, and More—The Future Is Now."**

AUTHOR: Decker, Robert; Krajewski, Robert J.

JOURNAL: *American School Board Journal*; v173 n3 p32-34, 44 Mar 1986.

ANNOTATION: Describes new technology involving the teaching of robotics in high schools. Provides information on how to develop robotics programs. Includes discussion of the uses of slow-scan television, satellite beams, and the possibilities of enhancement by linking new technologies. (MD)

TITLE: **"Free and Inexpensive Public Domain Software: Resources for Technology Education."**

AUTHOR: Schack, Mark A.

JOURNAL: *Technology Teacher*; v47 n4 p21-23 Jan 1988.

ANNOTATION: Discusses public domain software and how to obtain it. Lists mail order and online sources of free or inexpensive public domain software. (CH)

TITLE: ***Guidebook for Industrial Technology Teacher Preparation Field Experience.***

DATE: 1985.

AUTHOR: Foster, Phillip R., And Others.

DEVELOPER: Texas Education Agency, Austin. Dept. of Occupational Education and Technology.

ANNOTATION: This handbook is intended to assist in the assessment and refinement of teacher preparation for industrial technology education in Texas. The first section contains preliminary information on the significance, development, and use of the guidebook. Provided next is an industrial technology teacher preparation assessment instrument that is based on a national survey of model or exemplary industrial technology teacher preparation programs. The next section contains a second industrial teacher preparation assessment instrument, which was developed for a three-round Delphi study. The fourth and final section consists of suggested recommendations for program improvement that were written with the following considerations in mind: essential elements, special needs students, equal access, and appro-

priate computer applications. Extensive appendixes include an instrument for assessing model field experience programs, survey results of model industrial technology field experience programs, statements characterizing a model industrial technology field experience, essential elements for introductory industrial technology courses at different levels, and membership lists of various panels and committees connected with developing the materials and methods used in the guidebook. (MN)

FORMAT Administrative Material; Questionnaire; 93p.

AVAILABILITY For a microfiche copy of this document order ED266256 from FEIS.

TITLE **"Helping Students Develop Problem Solving Skills."**

AUTHOR Baker, G. E.; Dugger, John C., III

JOURNAL *Technology Teacher*, v45 n4 p10-13 Jan 1986.

ANNOTATION Identifies procedure to help classroom teachers infuse problem solving into the typical technology education classroom. The five steps involved are (1) set a goal the student can attain, (2) define a task that incorporates new actions and ideas, (3) provide a structure, (4) force the student to choose between several alternatives, and (5) make the student evaluate the activities. (CT)

TITLE ***High School Industrial Arts. A Guide for Teachers.***

DATE 1984

DEVELOPER Oregon State Department of Education, Salem.

ANNOTATION This teacher's guide is designed to help high school industrial arts teachers plan activities to develop their students' awareness of technology in our culture and the variety of related careers available to them. Discussed first are the objectives, scope, and sequence of industrial arts. Next, the special characteristics and needs of adolescents, women in industrial arts programs, disadvantaged or disabled students, and students from various ethnic and racial groups are examined. Discussed in the next two chapters is the need to incorporate basic skills and entrepreneurship education activities into industrial arts curricula. The fifth chapter consists of a series of program goals, course goals, and suggested activities for use in covering the following subject areas in an industrial arts curriculum: graphic communications, energy and power, materials and processes, academic skills, employment opportunities and career choice, safety, multicultural awareness, and entrepreneurship. Provided next are a series of course outlines devoted to the following topics: graphic communications, entrepreneurship, robotics, computer-aided design and computer-aided manufacturing, nondestructive testing, properties of materials, manufacturing processes, energy and power, voice synthesis, fiber optics, and optoelectronics. The final chapter discusses various resources available to industrial arts teachers, including advisory committees, student organizations, publishers, regional coordinators, journals, professional associations, and curriculum and resource centers. (MN)

FORMAT Teaching Guide; 81p.

AVAILABILITY For a microfiche copy of this document order ED255646 from FEIS.

TITLE **"High Tech in a Comprehensive High School."**

AUTHOR Tamanini, Mary E.

JOURNAL *NASSP Bulletin*, v71 n496 p129 Feb 1987.

ANNOTATION In 1984 the vocational studies department of a New Jersey high school transformed its industrial arts program into a technological studies department designed to prepare students for college and emerging job markets. A high technology laboratory with sophisticated energy, communications, computer, and video equipment was created to accompany this program. (MLH)

TITLE **"High Technology: A Curricular Emphasis for Technology Education."**

AUTHOR Peterson, Richard E.

JOURNAL *Technology Teacher*, v45 n3 p26-29 Dec 1985.

ANNOTATION This article defines high technology, identifies some of the reasons it should be studied, and suggests some ways that it can be studied in industrial arts/technology laboratories. These suggestions include identifying topics for study, gathering information, organizing information, performing laboratory activities, and presenting the study. (CT)

SERIES **Illinois Plan for Industrial Technology Education Junior High Exploration Units.**

TITLE ***Exploring Computer Technology.***

Exploring Electricity/Electronics.

Exploring Photography.

Exploring Solar Energy.

Exploring Technology and the Future.

Implementation Guide.

Recycling Materials.

Research and Development.

Servicing Products.

Using Alternate Energy Sources.

Using the Language of Industry.

DATE 1987

ANNOTATION These are technology-based units that place a heavy emphasis on affordable, hands-on learning activities that utilize commonly available materials. Each unit includes a rationale, hints to the teacher, lesson plans, teacher aids, student handouts, overhead transparency masters, a unit examination, and a list of resources.

FORMAT Teaching Guides.

AVAILABILITY Available as a set or as individual units; contact for prices. Curriculum Publications Clearinghouse, Western Illinois University, 46 Horrabin Hall, Macomb, IL 61455.

TITLE: ***Implementing Technology Education in America's Schools.***

DATE: 1985

AUTHOR: Maley, Donald

ANNOTATION: Practitioners involved in implementing technology education in middle, junior, and senior high schools should keep several guiding principles in mind. Technology education is a vital educational component in a highly technological society, and present and future societies will depend upon the wise use of technology as an important factor in survival and human progress. Technology education must be packaged and delivered in keeping with the characteristics and needs of all students at all ability levels. The program should be experientially based and should utilize the base of research findings on how individuals learn. Instruction should take place in the context of a multi- and cross-disciplinary involvement of the learner. Technology education must be extended beyond the craft domination of previous years and most programs, thus making technology education much more broadly conceived than technical education as it is usually understood. The process of technology education must be a holistic one that recognizes the fact that nothing can be studied to any measurable degree within a single discipline. (MN)

FORMAT: Conference Paper; Position Paper; 13p.

AVAILABILITY: For a microfiche copy of this document order ED265380 from FEIS.

TITLE: **"Implementing Technology Education: Planning for Change."**

AUTHOR: DeLuca, V. William.

JOURNAL: *Technology Teacher*; v47 n3 p3-6 Dec 1987.

ANNOTATION: Presents a three-phase plan for teachers implementing technology education programs. Phases consist of (1) gathering information and determining curriculum direction, (2) selecting activities, and (3) sequencing activities. Suggestions for evaluation are also included. (CH)

SERIES: **Industrial Arts/Technology Education.**

TITLE: ***Communication.***

Construction.

Manufacturing.

Transportation.

DATE: 1987.

ANNOTATION: This curriculum is divided into four program guides. *Communication, Manufacturing, Transportation,* and *Construction.* Each guide has been printed as a self-contained unit, with a total curriculum consisting of all four guides. Part One of each includes philosophy, rationale and goals of technology education, technology education scope and sequence, high school learning outcomes, and information on the four systems of technology. The remainder of each guide is devoted to the specific program area—communication, construction, manufacturing, or transportation.

FORMAT: Curriculum Guides; Competency-based; 65-99p.

AVAILABILITY: Sale, $10.00 each. West Virginia Vocational Curriculum Laboratory. Cedar Lakes Conference Center. Ripley, WV 25271. (304) 372-7017.

TITLE: ***Industrial Arts—Technology Education Curriculum Framework.***

DATE: 1986.

DEVELOPER: Tennessee State Board of Education, Nashville.

ANNOTATION: Designed to serve as a basis for industrial arts/technology education curriculum development and implementation for grades 5-12. Curriculum frameworks are included for Introduction to Technology, Exploring Technology, Communications and Media Technologies, Materials and Processes Technologies and Power, and Energy and Transportation. Goals and terminal objectives are provided.

FORMAT: Curriculum Guide; Competency-based; 32p.

AVAILABILITY: Loan, 4 weeks. Librarian, Southeast Curriculum Coordination Network. PO Drawer DX. Mississippi State, MS 39762. (601) 325-2510.

SERIES: **Industrial Technology Curriculum Guides.**

TITLE: ***Communication Technology Curriculum Guide.***

Energy Utilization Technology Curriculum Guide.

Production Technology Curriculum Guide.

Transportation Technology Curriculum Guide.

DATE: 1984.

ANNOTATION: Part of the Illinois Plan for Industrial Education, these guides were developed to assist high school teachers as they plan and implement a 9th-10th grade, one-semester, orientation-level course. Each guide includes sample competencies, selected learning activities, and an extensive resource listing.

FORMAT: Curriculum Guides; 49-62p.

AVAILABILITY: Sale, $6.25 each. Curriculum Publications Clearinghouse. Western Illinois University. 46 Horrabin Hall. Macomb, IL 61455. (309) 298-1917.

SERIES: **Industrial Technology Curriculum Learning Activity Packets.**

TITLE: ***Communication Technology.***

Energy Utilization Technology.

Production Technology.

Transportation Technology.

DATE: 1985.

ANNOTATION: Curriculum materials which relate to the four cluster courses for the orientation level of the Illinois Plan for Industrial Education. These materials supplement the four Illinois Technology Education Curriculum Guides. Each packet contains a representative group of learning activities with a lesson

plan, procedures for implementation, a student worksheet, and overhead transparency masters.

FORMAT: Teaching Guides, 65–72p.

AVAILABILITY: Sale, $2.50 each. Curriculum Publications Clearinghouse, Western Illinois University, 46 Horrabin Hall, Macomb, IL 61455. (309) 298-1917.

TITLE: ***Industrial Technology Education Curriculum Guide.***

DATE: 1988.

ANNOTATION: Developed jointly by the Association of Texas Technology Education, the Texas Education Agency, and Extension Instruction and Materials Center, this guide includes the State Board of Education-approved essential elements for all industrial technology education courses, content outlines with correlation to essential elements, and suggested learning activity topics.

FORMAT: Curriculum Guide.

AVAILABILITY: Sale, $7.50. Extension Instruction and Materials Center, PO Box 7218, Austin, TX 78713-7218. (512) 471-7716.

TITLE: ***Industrial Technology Education: Findings and Recommendations of the Blue Ribbon Committee on the Future of Industrial Arts Education in Idaho.***

DATE: 1987.

DEVELOPER: Idaho State Department of Education, Boise.

ANNOTATION: This document contains a description of the activities, concerns, findings, and recommendations of the Idaho Industrial Arts Futuring Committee. It will serve as the foundation upon which subsequent revision of the state's industrial arts programs, to be renamed Industrial Technology Education (ITE), can be built. Section I, on philosophy and foundation, presents the findings and recommendations regarding the social context, implications for education, and the nature of industrial technology. The name Industrial Technology Education is recommended and a philosophy for ITE is provided. Section II, on roles, missions, goals, and objectives, contains the findings and recommendations for the rationale, mission, ITE goals, and ITE content. Section III, on scope and sequence, provides committee findings and then recommends a plan for each ITE course, the minimum components for each ITE program, and a sample list of ITE courses consistent with scope and sequence recommendations. This list of courses details grade level, primary function, course name, and course content. Section IV, on implementation and long-range planning, presents the recommendations for activities in the form of six goals to help Idaho make the transition to a dynamic ITE program. Five recommendations for the next year (1988) are made. (YLB)

FORMAT: Position Paper, 26p.

AVAILABILITY: For a microfiche copy of this document order ED286038 from FEIS.

TITLE: ***Industrial Technology. Iowa Developed Energy Activity Sampler, 6-12. Revised.***

DATE: 1987.

DEVELOPER: Iowa State Dept. of Natural Resources, Des Moines. Energy Div.

ANNOTATION: The revised *Iowa Developed Energy Activity Sampler* (IDEAS) was compiled using the original IDEAS program and the Energy Conservation Activity Packets (ECAPS). This document is one of the series of revised IDEAS booklets, and provides activities for teaching industrial arts/technology education. The activities are intended to present energy principles in an interesting manner and to develop student skills in acquiring information and making well-informed decisions about energy issues. Each of the 17 activities in this document includes: (1) the subject area for which the activity was written, (2) the grade level, (3) a brief statement about the activity itself, (4) the objective(s) of the activity, (5) a list of materials needed, (6) the approximate amount of time needed for the activity; (7) a more complete description of the activity, including the various components of the activity and their relationship to Jean Piaget's learning cycle (awareness, concept development, application); and (8) some follow-up/background information. In some activities the original source of the activity is also given. The focal points of the entire document are energy concerns, impacts, choices, challenges, and conservation. (TW)

FORMAT: Teaching Guide, 82p.

AVAILABILITY: For a microfiche copy of this document order ED287665 from FEIS.

TITLE: ***Industry and Technology Education: A Guide for Curriculum Designers, Implementors, and Teachers. Bulletin No. 4432.***

DATE: 1984.

DEVELOPER: Wisconsin State Department of Public Instruction, Madison.

ANNOTATION: This operational-level implementation guide is intended for the local or state curriculum designer of industrial arts/technology education curricula. A rationale and mission statement for industry and technology education appear first. The assumptions upon which program structures were developed are listed, and the three model program structures that were developed to accommodate industrial arts programs of three sizes—small, medium, and large—are described. The five common elements of each program structure are discussed, and charts of the three programs are presented. Structures are provided for these 18-week-long courses: an introductory foundation course, communication, construction, manufacturing, transportation, and two synthesis courses (research and development and enterprise). This information is given for each course: course description, course objectives, and an outline detailing content and representative activities. In addition, a chart indicating content for the three programs and an introduction to the subject are provided for the four courses dealing with the content areas (communication, construction, manufacturing, transportation). Guidelines are recommended for initiating and implementing an industrial arts program re-

flecting the intent of this guide. Appendixes include the Jackson's Mill Industrial Arts curriculum theory and taxonomies for each content area. (YLB)

FORMAT: Administrative Material; 376p.

AVAILABILITY: For a microfiche copy of this document order ED248340 from ERIC.

TITLE: **"Information On-line for Technology Education."**

AUTHOR: Schack, Mark.

JOURNAL: *Technology Teacher*; v46 n6 p29; 31-32; 34-35 Mar 1987.

ANNOTATION: The author discusses the types of on-line data bases useful to technology educators and other applications of on-line technology. He briefly describes (1) search techniques, (2) equipment requirements, (3) costs, and (4) various information services. (CH)

TITLE: ***Instructional Tasks-Competencies for Communications Technology.***

DATE: 1985.

ANNOTATION: Divided into two major sections: Programs and Courses and Task Inventory. Focus on identifying, developing, and using one-way and two-way communication systems; using drafting equipment; generating and transferring images for graphic communications; and participating in a communications enterprise. Used with the *Technology Education Guide to CBE Implementation*.

FORMAT: Curriculum Guide; Teaching Guide; Reference Material; Competency-based; Task Analysis; Criterion-referenced Evaluation; 124 pp.

AVAILABILITY: Sale, $6.84. Virginia Vocational Curriculum and Resource Center, 2200 Mountain Road, Glen Allen, VA 23060. (804) 262-7439.

TITLE: ***Instructional Tasks-Competencies for Energy and Power.***

DATE: 1985.

ANNOTATION: Each task in the course, Energy and Power, is analyzed in this publication, and performance objectives, criterion-referenced measures, and supplemental information are provided. The guide is to be used with the *Technology Education Guide to CBE Implementation*, and course content is suggested for use in grades 9–12. Topics focus on types of power systems, internal combustion engines, pneumatics, hydraulics, electrical motors, and motor controls.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Task Analysis; Criterion-referenced Evaluation; 128p.

AVAILABILITY: Sale, $7.05. Virginia Vocational Curriculum and Resource Center, 2200 Mountain Road, Glen Allen, VA 23060. (804) 262-7439.

TITLE: ***Instructional Tasks-Competencies for Materials and Processes Technology.***

DATE: 1986.

ANNOTATION: This task analysis package supports competency-based instruction in the nature and properties of various materials and how they are processed for use by industry and individual consumers. Tasks/competencies allow students to experiment with wood, metal, ceramic, polymeric, and composite materials by performing processes related to combining, separating, forming, and finishing; to select materials for given applications according to their structure and properties; and to test physical, mechanical, and chemical properties of materials.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Task Analysis; Criterion-referenced Evaluation; 230p.

AVAILABILITY: Sale, $12.29. Virginia Vocational Curriculum and Resource Center, 2200 Mountain Road, Glen Allen, VA 23060. (804) 262-7439.

TITLE: ***Instructional Tasks-Competencies for Modern Industry.***

DATE: 1985.

ANNOTATION: Task analyses for the study of both process-project-type and line production-type industries. Competencies related to project or product selection, managing production and personnel, marketing, and preparing reports and exhibits. Also contains selected handouts and transparency masters and resource section. Used with the *Technology Education Guide to CBE Implementation*.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Task Analysis; Transparency; 224p.

AVAILABILITY: Sale, $11.97. Virginia Vocational Curriculum and Resource Center, 2200 Mountain Road, Glen Allen, VA 23060. (804) 262-7439.

TITLE: ***Instructional Tasks-Competencies for Power and Transportation Technology.***

DATE: 1984.

ANNOTATION: This guide supports an exploration of power and energy sources and transportation systems. Mechanical, electrical, and fluid power and thermal and automotive engines are presented in theory and in laboratory experiments, along with projects involving the planning of mass transportation systems and construction of a working vehicle model. A course outline, program and course descriptions, and a suggested teaching sequence are included. This guide is designed for use with the *Technology Education Guide to CBE Implementation*.

FORMAT: Curriculum Guide; Teaching Guide; Competency-based; Task Analysis; Criterion-referenced Evaluation; 153p.

AVAILABILITY: Sale, $8.33. Virginia Vocational Curriculum and Resource Center, 2200 Mountain Road, Glen Allen, VA 23060. (804) 262-7439.

TITLE: **"Integrating Glass Technology into Secondary School Technology Education Programs."**

AUTHOR: Hacker, Michael; Grey, Paul.

JOURNAL: *Technology Teacher*; v44 n4 p9–12 Jan 1985.

ANNOTATION: Processing of the three major groups of modern glasses is described. Low-melting-point glasses and the roles of their ingredients are discussed. Other processes (calcining, melting, fining the batch, annealing, testing for stress, colorants) are explained.

Finally, a secondary-level pilot program for glass technology is suggested. (CT)

TITLE: **"Integrating Math and Science into Technology Education."**

AUTHOR: Maley, Donald

JOURNAL: *Technology Teacher*, v46 n8 p9-12 May-Jun 1987

ANNOTATION: Describes a program funded by the Maryland State Department of Education that promotes interaction among technology, mathematics, and science programs. The program features a two-week workshop during which three teachers from each school prepare interdisciplinary lesson units, one-day workshops for all technology faculty, and a statewide conference. (CH)

TITLE: **"Integrating Technology Education with the School Library."**

AUTHOR: Baker, Bruce; Nash, Steve

JOURNAL: *Technology Teacher*, v46 n7 p11-13 Apr 1987

ANNOTATION: Describes the technology curriculum for eighth-graders at the Greece Central School District in New York. The curriculum features technology program/library cooperation to let students produce video programming. (CH)

TITLE: ***Interdistrict Implementation of "Principles of Technology."***

DATE: 1987

PROJECT DIRECTOR: Wing, Roger M. (206) 455-6074. Bellevue Public Schools, PO Box 90010, Bellevue, WA 98009-9010

ANNOTATION: A management plan will be developed to facilitate implementation of the program for pilot high schools within the eight-district Northeast Vocational Area Cooperative. Also, procedures and specifications will be delineated for materials, equipment, and facilities for establishing a Principles of Technology laboratory, and an inservice program for teachers will be developed. An evaluation plan will be developed and revised as appropriate.

FORMAT: Project Description

TITLE: ***Interfacing Math, Science, and Technology.***

DATE: 1987

ANNOTATION: Student laboratory activities that use technology education as the focus for learning and applying concepts of math and science in the technical world.

FORMAT: Teaching Guide

AVAILABILITY: Sale, $20.00. Extension Instruction and Materials Center, PO Box 7218, Austin, TX 78713-7218. (512) 471-7716.

TITLE: ***Introduction to Technology, Grade 7. Draft Syllabus. Field Test Edition.***

DATE: 1985

DEVELOPER: University of the State of New York, State Education Department, Division of Occupational Education, Albany

ANNOTATION: This course is designed to enable students to understand the concepts that underlie technological systems. Students will learn about the influence of technological systems on their lifestyles, including home, school, and the world of work. The systems studied include Biotechnology, Information-Communications Technology, and Physical Technology. Concepts are explored through hands-on Technology Learning Activities (TLA). Order Number: NY-71

FORMAT: Curriculum Guide; Teaching Guide; Learning Module; Competency-based; Behavioral Objectives; Illustrated; 186p

AVAILABILITY: Loan, 4 weeks. Northeast Curriculum Coordination Center, New Jersey Vocational Education Resource Center, Rutgers—The State University, Crest Way, Aberdeen, NJ 07747. (201) 290-1900.

TITLE: ***Introduction to Technology, Grade 8. Draft Syllabus. Field Test Edition.***

DATE: 1985

DEVELOPER: University of the State of New York, State Education Department, Division of Occupational Education, Albany

ANNOTATION: This course addresses generic technological concepts, focusing on technical processes, the methods that people can use to control them, technological career opportunities, and other personal and societal implications of technology. Students will encounter a wide variety of technical processes, monitor those processes, and use feedback to control the operation of systems in three areas of technology: Biotechnology, Information-Communications Technology, and Physical Technology. Concepts are explored through hands-on Technology Learning Activities (TLA). Order Number: NY-72

FORMAT: Curriculum Guide; Teaching Guide; Learning Module; Competency-based; Behavioral Objectives; 51p

AVAILABILITY: Loan, 4 weeks. Northeast Curriculum Coordination Center, New Jersey Vocational Education Resource Center, Rutgers—The State University, Crest Way, Aberdeen, NJ 07747. (201) 290-1900.

TITLE: ***Iowa High School Industrial Technology Curriculum Project: Construction Module.***

DATE: 1986

ANNOTATION: This document is a self-contained instructional unit designed to cover 2–3 weeks of class time in secondary industrial technology programs. Included are lesson plans, handouts, transparency masters, slides, and microcomputer courseware. The content covered may be infused into introductory courses or advanced courses and requires a minimum amount of tools and materials for implementation. This module focuses on the wall sections and their utilization instructions.

FORMAT: Administrative Manual; Teaching Guide; Evaluation Instrument; Learning Module; Behavioral Objectives; Field-tested/Validated; Illustrated; 102p.; Videotape; Slides; Color; Transparency Master; Microcomputer Program; Apple; 1 Disk; 5 1/4 Inch Size.

AVAILABILITY: Sale, $24.90 in-state; $49.80 out-of-state. Iowa Curriculum Assistance System. College of Education. N008 Lagomarcino Hall, Iowa State University. Ames, IA 50011. (515) 294-8920.

TITLE: ***Iowa High School Industrial Technology Curriculum Project: Energy and Power Module.***

DATE: 1986.

ANNOTATION: This document is a self-contained instructional unit designed to cover 2–3 weeks of class time in secondary industrial technology programs. Included are lesson plans, handouts, transparency masters, and microcomputer courseware. The content covered may be infused into introductory courses or advanced courses and requires a minimum amount of tools and materials for implementation. This module focuses on hydraulic, thermal, and sensing systems as they apply to solar collectors.

FORMAT: Administrative Manual; Teaching Guide; Evaluation Instrument; Learning Module; Behavioral Objectives; Field-tested/Validated; Illustrated; 192p.; Transparency Master; Microcomputer Program; Apple; 1 Disk; 5 1/4 Inch Size.

AVAILABILITY: Sale, $15.00 in-state; $30.00 out-of-state. Iowa Curriculum Assistance System. College of Education. N008 Lagomarcino Hall, Iowa State University. Ames, IA 50011. (515) 294-8920.

TITLE: ***Iowa High School Industrial Technology Curriculum Project: Graphic Communications Module.***

DATE: 1986.

ANNOTATION: This document is a self-contained instructional unit designed to cover 2–3 weeks of class time in secondary industrial technology programs. Included are lesson plans, handouts, transparency masters, slides and microcomputer courseware. The content covered may be infused into introductory courses or advanced courses and requires a minimum amount of tools and materials for implementation. This module covers information dealing with image design and an introduction to computer-assisted design.

FORMAT: Administrative Manual; Teaching Guide; Evaluation Instrument; Learning Module; Behavioral Objectives; Field-tested/Validated; Illustrated; 164p.; Slides; Color; Transparency Master; Microcomputer Program; Apple; 1 Disk; 5 1/4 Inch Size.

AVAILABILITY: Sale, $25.90 in-state; $51.80 out-of state. Iowa Curriculum Assistance System. College of Education. N008 Lagomarcino Hall, Iowa State University. Ames, IA 50011. (515) 294-8920.

TITLE: ***Iowa High School Industrial Technology Curriculum Project: Manufacturing Module.***

DATE: 1986.

ANNOTATION: This document is a self-contained instructional unit designed to cover 2–3 weeks of class time in secondary industrial technology programs. Included are lesson plans, handouts, transparency masters, slides, and microcomputer courseware. The content covered may be infused into introductory courses or advanced courses and requires a minimum amount of tools and materials for implementation. This module consists of a unit in material testing. It is applicable to all types of materials.

FORMAT: Administrative Manual; Teaching Guide; Evaluation Instrument; Learning Module; Behavioral Objectives; Field-tested/Validated; Illustrated; 149p.; Slides; Color; Transparency Master; Microcomputer Program; Apple; 1 Disk; 5 1/4 Inch Size.

AVAILABILITY: Sale, $18.90 in-state; $37.80 out-of-state. Iowa Curriculum Assistance System. College of Education. N008 Lagomarcino Hall, Iowa State University. Ames, IA 50011. (515) 294-8920.

TITLE: ***Iowa High School Industrial Technology Curriculum Project: Transportation Module.***

DATE: 1986.

ANNOTATION: This document is a self-contained instructional unit designed to cover 2–3 weeks of class time in secondary industrial technology programs. Included are lesson plans, handouts, and transparency masters. The content covered may be infused into introductory courses or advanced courses and requires a minimum amount of tools and materials for implementation. This module consists of a basic introduction to all types of transportation. Includes 3-ring binder.

FORMAT: Administrative Manual; Teaching Guide; Evaluation Instrument; Learning Module; Behavioral Objectives; Field-tested/Validated; Illustrated; 75p.; Videotape; Color; Slides; Color; Transparency Master.

AVAILABILITY: Sale, $15.00 in-state; $30.00 out-of-state. Iowa Curriculum Assistance System. College of Education. N008 Lagomarcino Hall, Iowa State University. Ames, IA 50011. (515) 294-8920.

TITLE: ***Math/Science/Technology Projects for the Technology Teacher. A Professional Monograph.***

DATE: 1985.

AUTHOR: Maley, Donald L., Ed.

ANNOTATION: The underlying development behind this monograph grew out of a series of 14 panels (20 inches by 28 inches) illustrating the basic linkages between existing industrial arts/technology education activities and mathematics or science principles or societal and environmental impacts. Specifically, each panel contained a full-color photograph of a student-made model of an important technological development. The remainder of the panel contained formulas or principles of mathematics and science or implications for societal and environmental impacts associated with the technological

development pictured on the panel. Each of the 14 panels has been photographed and included in this publication along with a brief description of the particular technological development, a series of mathematics and science concepts, principles, and formulas, or in some cases, a series of social and environmental impact statements relative to the project pictured on the panel. Science and mathematics projects focus on the waterwheel, lateen sail, trebuchet (a medieval artillery invention), block and tackle, camera, incandescent lamp, hydraulic elevator, and the Wright brothers' airplane. Social and environmental impacts focus on the telephone, papermaking machine, automobile, undersea turbine, space shuttle, and the first American hydroelectric plant. (JN).

FORMAT: Reference Material, 56p.

AVAILABILITY: For a microfiche copy of this document order ED263018 from FEIS.

TITLE: ***Missouri Industrial Technology Education Guide.***

DATE: 1987.

DEVELOPER: Missouri State Dept. of Elementary and Secondary Education, Jefferson City. Div. of Vocational and Adult Education.

ANNOTATION: This guide is intended to serve as Missouri's primary resource for planning, implementing, and evaluating industrial technology/industrial arts education. The following topics are covered: selecting a direction for industrial technology education (ITE) (its underlying philosophy, mission, goals); planning an ITE program (recommended scope and sequence for ITE, recommended courses for ITE, revision or updating of existing programs, steps in starting a new program, procedures for documenting the curriculum); implementing an ITE program (following current trends in ITE, updating existing facilities, planning new facilities, equipping an ITE program, maintaining laboratory equipment, implementing a safety program, informing key constituents); teaching ITE (planning instruction, selecting instructional materials, meeting individual and special needs, providing for equity, incorporating student organization activities, teaching employability skills); organizing and managing an ITE program (gaining access to key resource personnel, using advisory committees, organizing and managing ITE); evaluating ITE (evaluating program, student, and teacher performance); meeting professional responsibilities (ethics, pre- and inservice education, professional involvement); and using resources (the Missouri ITE Standards, the Missouri ITE Guide, recommended competencies for core courses). (MN).

FORMAT: Administrative Material, 320p.

AVAILABILITY: For a microfiche copy of this document order ED288995 from FEIS.

TITLE: ***The Model Industrial Technology Systems Project.***

DATE: 1987.

DEVELOPER: Ohio State Dept. of Education, Columbus.

ANNOTATION: This document contains materials used in a model industrial technology program that introduced technology into the curricula of elementary, middle, and high schools in three sites in Ohio: the central site (coordinated through Ohio State University), the northeast site (coordinated through Kent State University), and the northwest site (coordinated through Bowling Green State University). A short summary of the second year's activities is followed by four appendices that constitute the bulk of the document. Appendix A consists of curriculum materials suitable for elementary school classes. Each of the 16 units contains a concept, activity, objective, levels of awareness, demonstration, participation, and vocabulary. Units cover the following topics: technology alphabet book, light, measure, tools, logo communications, natural/synthetic construction, pictographs, molds/fossils, ergonomics, photocopies, Rube Goldberg, paper alteration, real wood, rapid communication, bubbles and spheres, and domino constructions. Appendix B contains high school curriculum materials classified according to a technology taxonomy. High school units contain background, objectives, introduction, activity questions, activity, and suggested equipment and supplies. Eight lessons center on communication technology, and 23 lessons focus on various aspects of manufacturing technology. Appendix C includes letters to the satellite schools involved in the project, and Appendix D contains project publicity materials. (KC).

FORMAT: Project Description; Teaching Guide; 184p.

NOTE: Sponsored in cooperation with the Ohio Industrial Technology Education Association.

AVAILABILITY: For a microfiche copy of this document order ED284037 from FEIS.

TITLE: ***A Model Principles of Technology Program (C-06A).***

DATE: 1987.

DEVELOPER: Leander Independent School District, 401 South West Street, Leander, TX 78641. (512) 259-1113.

ANNOTATION: After approval has been secured for Principles of Technology as an experimental course, Units 1–7 will be delivered to a target secondary audience. A proposed set of essential elements for the course as it applies to secondary vocational instruction will be developed. A plan for articulation to postsecondary Principles of Technology curricula also will be developed with Austin Community College. Pretests and posttests will be developed to gauge progress, and student and faculty attitudes will be assessed.

FORMAT: Project Description.

TITLE: ***New Jersey Technology Education Curriculum Project, Level 1: Introduction to Technology Course.***

DATE: 1987.

AUTHOR: Hutchinson, John, Ed.

ANNOTATION: This guide describes an introductory course on technology designed for the secondary schools of New Jersey that was developed to provide students with their first formal

experience in a technology program. Part 1 provides educators with a broad overview of the course, as well as a detailed description of the course content. The course consists of six instructional modules: an introductory module plus five modules concerned with design/problem solving, the history/evolution of technology, systems of technology, resources of technology, and control technology. Each module provides the teacher with (1) a brief introduction to the module; (2) the objectives of the module; (3) background information for the teacher; (4) a technology perspective; and (5) teaching strategies for meeting module objectives (including lessons and activities). The appendices include a taxonomy of course content, additional technology activities, an evaluation instrument for technology activities, listings of recommended tools and supplies for an introductory technology course, recommended materials for a technology resource center, and a pre-post technology interest and assessment instrument. (TW).

FORMAT: Teaching Guide, 106p.

AVAILABILITY: For a microfiche copy of this document order ED288733 from FEIS.

SERIES: **North Dakota Junior High School Technology Education Curriculum Guides, Level II.**

TITLE: ***Communication Technology.***

Construction Technology.

Energy and Transportation Technology.

Exploring Technology.

Manufacturing Technology.

DATE: 1987.

DEVELOPER: Department of Industrial Technology, University of North Dakota, Grand Forks.

ANNOTATION: Covers the five different courses recommended for the Level II junior high school program of the North Dakota Technology Education Curriculum Plan. Each course has its own guide consisting of rationale, objectives, implementation guide, taxonometric content structure, list of major units, outline of major units, transparency masters, suggested activities, references, computer programs, and bibliography.

FORMAT: Curriculum Guides; Teaching Guides; 442p.

AVAILABILITY: Loan, 2 weeks. Librarian, Southeast Curriculum Coordination Network. PO Drawer DX. Mississippi State, MS 39762. (601) 325-2510.

TITLE: ***Organization and Management of Instruction for Systems of Technology.***

DATE: 1986.

ANNOTATION: This is a teacher's handbook for teaching the new approach to industrial arts-technology education, as exemplified in the EIMC Systems of Technology series. It focuses on such factors as organization and structure, strategies, management, safety, special needs and special populations, civil rights, sex equity.

FORMAT: Curriculum Guide; Competency-based; Criterion-referenced Evaluation; 81p.

AVAILABILITY: Sale, $8.50. Extension Instruction and Materials Center. PO Box 7218. Austin, TX 78713-7218. (512) 471-7716.

TITLE: ***A Planning Guide for Montana Industrial Education/Technology Programs.***

DATE: 1985.

DEVELOPER: Montana State Dept. of Public Instruction, Helena.

ANNOTATION: This technology implementation plan for industrial education has been developed to provide Montana educators with an articulated plan for industrial education from junior high through adult levels. It is intended to help teachers to (1) develop an understanding of the philosophical base upon which a forward-looking industrial education program is founded, (2) identify a curriculum development procedure and teaching strategies, and (3) locate resources and educational aids to supplement curriculum materials. The guide covers the five levels of the Montana Plan for Industrial Education, which is designed to reach students from grades 7 to adult, and then takes teachers step-by-step through a process for implementing technology into their programs. It includes information on why the program is justified, where it is going, who the teacher has to work with, what needs to be done on each level, how to implement it, and when to begin. An annotated section of resources includes lists of books, organizations, and periodicals. (KC).

FORMAT: Administrative Material, 29p.

AVAILABILITY: For a microfiche copy of this document order ED253720 from FEIS.

TITLE: ***Plastic Technology, Industrial Arts Curriculum Guide.***

DATE: 1984.

ANNOTATION: Designed to assist instructors in the development of curriculum for intermediate- and secondary-level students in plastics technology.

FORMAT: Curriculum Guide; Bibliography; Competency-based; Behavioral Objectives; 90p.

AVAILABILITY: Sale, $5.75. Director, Instructional Materials Laboratory, University of Missouri. 10 Industrial Education Building. Columbia, MO 65211. (314) 882-2883.

TITLE: ***Preparing the Technology Education Profession for the Future.***

DATE: 1984.

AUTHOR: DeVore, Paul W.

ANNOTATION: The first step in determining how to prepare the future teachers who will teach in the field of technology education in the 21st century is to determine what technology education itself will be like. If one purpose of technology education is to prepare people to adapt to new situations and control their own destinies, then the role of educators in the technologies should be to determine what learning is of most worth in the ever-changing, dynamic, worldwide technological society. Traditionally, educators have separated liberal education from technological

education. This can no longer be the case. Teacher education programs must be revamped radically and must receive adequate staffing and funding to prepare future teachers who will be able to provide technology education that is both job specific and broad enough to focus on the role of the individual in a free society. Research is necessary to develop pedagogical methods adequate to prepare teachers who can fuse the knowledge about the concepts, relationships, and consequences of technical means with the knowledge and know-how for using and designing appropriate technical means. (MN)

FORMAT: Conference Paper; Position Paper; 37p.

NOTE: Technical Foundation of America Distinguished Lecture delivered at the Annual Conference of the Kentucky Industrial Education Association (Louisville, KY, November 2-3, 1984).

AVAILABILITY: For a microfiche copy of this document order ED265408 from FEIS.

TITLE: ***Principles of Technology.***

DATE: 1987.

PROJECT DIRECTORS: Gloechner, Gene W.; Loepp, Franzie L. (217) 438-2310. Illinois State University, Industrial Technology Department, Normal, IL 61761.

ANNOTATION: Nine pilot Principles of Technology programs will be established in high schools throughout the state. Also, information about principles of technology will be disseminated and consultant services will be provided. Project activities will include conducting workshops, making presentations, and establishing a computer network. A final report will be delivered.

FORMAT: Project Description.

TITLE: **"'Principles of Technology'—The First Two Years."**

AUTHOR: Selland, Larry G.

JOURNAL: *Vocational Education Journal*; v61 n4 p47-49 May 1986.

ANNOTATION: The author reports on the development and early implementation of a 14-unit curriculum called Principles of Technology for high school students. The curriculum combines science, mathematics, and vocational education concepts with basic technological literacy. (CH)

TITLE: ***Program Guide K-12. Pennsylvania Industrial Arts Technology Education.***

DATE: 1984.

AUTHOR: Stoudt, John; And Others.

ANNOTATION: This program guide is designed to provide the educational community with the recommended plan for industrial arts (IA) in Pennsylvania. It outlines the program that is consistent with the mandates and recommendations of the 1984 Chapter 5 Curriculum Regulations of the State Board of Education and has been developed using current national IA curriculum theories, the regulations of the State Board of Education, and the 12 goals of quality education. Contents include the philosophy of IA education, definition of IA, relationship of IA and technology, and an overview of an IA program of study (level, goals, and scope). Detailed programs of study follow for elementary school (grades K-6), middle or junior high school (grades 7-9), and senior high school (grades 10-12). Each provides a description, regulation, scope, planned courses and sequences, and instructional characteristics, such as time, population, staffing, facilities, clustering, and safety. The guide also contains a diagram of the 12 goals of quality education, a summary of curriculum recommendations for IA under Chapter 5—secondary grades, a chart showing IA articulation with vocational education and postsecondary education, information on the American IA Student Association and on safety, and a listing of available resources. (YLB)

FORMAT: Administrative Material; 24p.

AVAILABILITY: For a microfiche copy of this document order ED266331 from FEIS.

TITLE: ***Recommended Qualifications, Duties, and Responsibilities for Administrators of Technology Education (Industrial Arts).***

DATE: 1985.

DEVELOPER: American Council of Industrial Arts Supervisors, Washington, DC; International Technology Education Association, Reston, VA.

ANNOTATION: This booklet sets forth a set of qualifications and responsibilities for state and local administrators of technology education (industrial arts). A brief discussion of leadership and qualities of the leader is presented first. The responsibilities and duties are organized into outline form. They are categorized under these headings: personal history (education/certification, experience, personal characteristics), administrative responsibilities (executive, personnel, budget), supervisory (program, support functions), and public relations (school-community relationships, school-community communications). (YLB)

FORMAT: Administrative Material; 17p.

AVAILABILITY: For a microfiche copy of this document order ED266327 from FEIS.

TITLE: **"A Relationship between Technology Education and Trade and Industrial Education."**

AUTHOR: Sterry, Leonard F.

JOURNAL: *Technology Teacher*; v46 n3 p3-6 Dec 1986.

ANNOTATION: The author attempts to define technology education and to identify the relationship between the discipline and other, related fields. (CH)

TITLE: **"A Relationship between Technology Education and Trade and Industrial Education, Part 2."**

AUTHOR: Sterry, Leonard.

JOURNAL: *Technology Teacher*; v46 n5 p11-14 Feb 1987.

ANNOTATION: The author attempts to show a relationship between technology education and trade

and industrial education. He interprets the objectives of the combined disciplines and presents ideas on program organization. (CH).

TITLE: **"Resources in Technology: Systems and Subsystems."**

JOURNAL: *Technology Teacher*; v46 n3 p21-28 Dec 1986.

ANNOTATION: The technological systems of communication, production, and transportation provide the content for structuring technology education programs. State departments of education have produced curriculum materials based on these systems. To make programs meaningful, teachers must focus on technological systems and must study the technical and social/cultural impacts of each system. (CH)

TITLE: ***Robotics Applications for the Curriculum to Reflect Technology.***

DATE: 1985.

AUTHOR: Seaman, Virgil A.; Steck, Francis X.

ANNOTATION: This document contains suggestions for integrating the elements of robotics into technology education courses from elementary through junior high and high school levels. Eighteen courses into which robotics instruction can be incorporated are listed. They include the following: exploring industry and technology, introduction to industrial and technological systems, communication systems, electronic communication systems, construction systems, electromechanical systems and servicing, construction planning and design, constructing and servicing structures and systems, manufacturing systems, manufacturing materials and processes, product and production system design, manufacturing production systems, transportation systems, technical elements of transportation, planning and designing transportation systems, human and product transporting systems, research and development, and entrepreneurship. For each course title, grade level and size of school are given; robotics learning activities are detailed in a step-by-step fashion. A brief bibliography is included in the guide. (KC)

FORMAT: Conference Paper; Teaching Guide; 33p.

AVAILABILITY: For a microfiche copy of this document order ED255654 from FEIS.

TITLE: **"The Root of a Discipline: Industrial Arts/Technology Education."**

AUTHOR: Luetkemeyer, Joseph F.

JOURNAL: *Journal of Epsilon Pi Tau*; v10 n1 p22-26 Spr 1984.

ANNOTATION: Etymologically, industrial arts and technology seem to differ. The movement to change industrial arts education to technology education raises serious historical and philosophical questions about the orientation and basis of the curriculum. (SK)

TITLE: ***Science/Technology/Society: A Framework for Curriculum Reform in Secondary School Science and Social Studies.***

DATE: 1987.

AUTHOR: Hickman, Faith M.; And Others.

DEVELOPER: National Science Foundation, Washington, DC.

ANNOTATION: The Science/Technology/Society (STS) theme describes a contemporary trend in education which focuses on the teaching of issues such as air quality, nuclear power, land use, and water resources, but justification for including STS in the high school core curriculum has a precedence based on historical connections among science, technology, and society. Maintaining social order, perceiving contemporary events accurately, and advancing science and technology require secondary school students to understand the nature, concepts, and processes of these disciplines in a social context. While educators have stressed a need to implement STS-based core curriculums, their recommendations have not become trends in curriculum development or reform, and curriculum reformers estimate that more than 90 percent of high school graduates have reached only the lowest levels of scientific and technological literacy. Chapter One describes a curriculum framework organized into the categories of acquisition of knowledge, utilization of cognitive skills, and the development of attitudes. Chapters Two to Four discuss topics, concepts, issues, attitudes, and cognitive processes that can be used as integrative threads. Chapter Five examines curriculum options and alternatives, such as developing interdisciplinary courses. Chapters Six and Seven focus on the infusion of STS content into social studies and science courses. The concluding chapters, Eight and Nine, describe underlying teaching concepts, cognitive process skills, and guidelines for curriculum reform. (JHP).

FORMAT: Administrative Material, 56p.

AVAILABILITY: For a microfiche copy of this document order ED288783 from FEIS.

TITLE: **"Serving Mildly Handicapped Students in Technology Education."**

AUTHOR: Scott, Michael L.; And Others.

JOURNAL: *Technology Teacher*; v45 n3 p5-9 Dec 1985.

ANNOTATION: Examines ways of meeting the needs of special education students in technology education. Discusses activity-oriented instruction, adding relevance to the instruction, the development of problem-solving and communication skills, the use of peer tutors, involving a special educator in industrial arts classes, safety concerns, and available resources for teachers. (CT).

TITLE: **"Standards for Technology Education: A Foundation for Contemporary Programs."**

AUTHOR: Pinder, Charles A.; And Others.

JOURNAL: *Technology Teacher*; v44 n8 p4-5 May-Jun 1985.

ANNOTATION: Examines the original Standards for Industrial Arts Programs and background, need, purpose, and content of the revised standards covering educational philosophy, instructional programs, student population served, instructional staff, administration and supervision, support systems, instructional strategies, public relations, safety and health, and evaluation. (CT)

TITLE: ***Standards for Technology Education. Bulletin No. 3220.***

DATE: 1983.

DEVELOPER: Wisconsin State Department of Public Instruction, Madison. Bureau for Vocational Education.

ANNOTATION: This handbook consists of standards and assessment forms for use in evaluating technology education programs. The standards were developed by the United States Office of Education through a contract with the Virginia Polytechnic Institute. The standards are divided under 10 topic headings: philosophy, instructional program, student population served, instructional staff, administration and supervision, support systems, instructional strategies, public relations, safety and health, and the evaluation process. The standards are provided in a format for the use in assessment of all elements of a technology education program. (MD)

FORMAT: Legal Material; Questionnaire; 66p.

AVAILABILITY: For a microfiche copy of this document order ED242040 from FEIS.

SERIES: **Systems of Technology.**

TITLE: ***Laboratory Activities in Energy.***

Laboratory Activities in Production.

Laboratory Activities in Visual Communication.

DATE: 1985-86.

ANNOTATION: Three books that go from state goals to learning activities that can be copied for use by students. Shows how goals, essential elements, objectives, competencies, and matrices relate to activities. The activities include adaptations for teacher and student use.

FORMAT: Teaching Guides; Competency-based; Behavioral Objectives; 262-308p.

AVAILABILITY: Sale, $21.00 each. Extension Instruction and Materials Center, PO Box 7218, Austin, TX 78713-7218.

TITLE: **"Teaching Technology Education to Visually Impaired Students."**

AUTHOR: Mann, Rene.

JOURNAL: *Technology Teacher*; v47 n3 p7-10 Dec 1987.

ANNOTATION: Discusses various types of visual impairments and how the learning environment can be adapted to limit their effect. Presents suggestions for adapting industrial arts laboratory activities to maintain safety standards while allowing the visually impaired to participate. (CH).

TITLE: ***Technological Literacy: An Educational Mandate. Technology Education Symposium Proceedings (8th, Roanoke, Virginia, October 17-18, 1986).***

DATE: 1986.

AUTHOR: Sanders, Mark, Ed.

ANNOTATION: This document contains the following 16 papers presented at a conference on teaching technical education and technical literacy: "British School Technology and the Industry Education Unit" (Eric Bates); "The Development of Technological Education through Bedfordshire Local Education Authority to British School Technology" (Ron Denney); "The Illinois Center for Technological Literacy: A Response by the University of Illinois" (Thomas L. Erekson); "Technological Literacy through Educational Technology" (Minaruth Galey); "Technological and Civic Literacy: Symbiotic Relationship" (Anthony F. Gilberti); "Technological Literacy through Use of the Computerized Library" (Charlene Grass); "Mathematics: The Misunderstood Language of High Technology" (W. J. Haynie III); "Integrating the Systems of Technology" (Ronald E. Jones); "Technological Literacy: An Educational Challenge" (Franzie Loepp); "OM: College/University Creative Problem Solving Competition" (C. Samuel Micklus); "Technology Education in Southeast Virginia's Public Schools" (John M. Ritz, Robert F. Head, Paul L. Cummings, and James R. Doyle); "Assessing Students' Technical Reading Skills" (B. June Schmidt); "Technology Literacy Test" (Lee Smalley); "Beyond Tasks and Competencies to Problem Solving in Technology Education" (John C. Thomas); "Technological Literacy: An International Perspective" (Ronald D. Todd); and "A Leadership Model for Implementing Technological Literacy Education" (Robert E. Wenig). (KC)

FORMAT: Conference Proceedings; Research Report; 81p.

AVAILABILITY: For a microfiche copy of this document order ED277879 from FEIS.

TITLE: ***Technology Education: A Curriculum Guide. VOC ED 226.***

DATE: 1987.

AUTHOR: Thode, Brad.

DEVELOPER: Idaho State Department of Education, Boise. Division of Vocational Education.

ANNOTATION: This curriculum guide provides ideas for implementing technology education in grades 7-12. It assumes a basic understanding of the four clusters of manufacturing, construction, communications, and power/transportation and is meant to supplement and reorganize this approach with up-to-date information and activities. One way to present a variety of technological concepts in industrial arts is outlined. A technology education task list that groups the tasks into six modules follows. The module titles are: "Computer Applications in Technology", "Automation, Robotics, and Industrial Practices"; "Light, Lasers, and Fiberoptics", "Communication Technology"; "Technology/Academic Correlation"; and "Future Technology." An outline provides an overview of how technology education can be integrated into the four-cluster approach.

Each supporting objective is listed according to related cluster areas. Another outline lists tasks under the six modules. A performance objective and enabling objectives are given for each task. Appendixes include a glossary of computer terms for technology education, a list of suggested resources and related materials on implementation of a technology education program, an introduction to robotics for technology education instructors, and a communications model. (YLB)

FORMAT: Teaching Guide, 65p.

AVAILABILITY: For a microfiche copy of this document order ED286039 from FEIS.

TITLE: **"Technology Education: A Goal Whose Time Has Come."**

AUTHOR: Johnson, James R.

JOURNAL: *Technology Teacher*, v45 n1 p5-6 Sep-Oct 1985.

ANNOTATION: The author states that the urgent need to respond to change is, to a great extent, technology driven but that the response of education must be holistic, with all the disciplines interacting and contributing. He also addresses the nature of a technological society and the role of technical education teachers. (CT)

TITLE: **"Technology Education: A Modern Focus for Industrial Arts."**

JOURNAL: *NASSP Curriculum Report*, v14 n4 Apr 1985.

ANNOTATION: Efforts are currently underway to adjust the focus of industrial arts instruction to concentrate more on the study and understanding of technology and its role in our lives. For many years industrial arts programs have been industry-based, however, many professionals support a curriculum that will relate industrial arts instruction more closely to the contemporary world by shifting the focus to technology itself. To help educators understand the structure and implementation of a technology education, specifics are provided for each school level that include goals, program descriptions, outcomes, and courses. Charts show the recommended scope and sequence. Brief descriptions of what five other schools are already doing and a list of seven annotated sources of information are appended. (MLF)

FORMAT: Project Description, Review Literature, 7p.

AVAILABILITY: For a microfiche copy of this document order ED256034 from FEIS.

TITLE: **"Technology Education and the Future."**

AUTHOR: Glines, Donald.

JOURNAL: *Technology Teacher*, v45 n4 p7-10 Jan 1986.

ANNOTATION: Discusses the potential global and societal futures that will affect all of humankind, the implications of these futures for education and learning, practical action steps that technology education should take to better address the potential alternative futures, and the educational data available to assist staffs, students, and communities through this transition. (CT)

TITLE: **"Technology Education: Challenges and Opportunities."**

AUTHOR: Maley, Donald.

JOURNAL: *Technology Teacher*, v46 n7 p3-6 Apr 1987.

ANNOTATION: The author discusses the transition of industrial arts to technology education. He covers challenges, opportunities, and potential consequences. Management and assessment of the change process is discussed. (CH)

TITLE: ***Technology Education Curriculum K-12.***

DATE: 1987.

ANNOTATION: This guide provides an overview of Virginia's Technology Education Service and its long-range mission and goals. The three major segments of the guide focus on elementary, middle, and high school curriculum designs and options in technology education.

FORMAT: Curriculum Guide, 34p.

AVAILABILITY: Sale, $5.00. Virginia Vocational Curriculum and Resource Center, 2200 Mountain Road, Glen Allen, VA 23060. (804) 262-7439.

TITLE: ***Technology Education Guide to CBE Implementation.***

DATE: 1984.

ANNOTATION: This guide contains general information that is useful in instructional planning for all courses within the Technology Education Service area. The sections of the guide are titled Career Decision-making Information, Student Organizations, Classroom Management Systems, and Recording Systems. This guide is designed for use with the individual task-competency packages which designate the instructional tasks for each course in technology education.

FORMAT: Curriculum Guide, Teaching Guide, Competency-based, Behavioral Objectives, 110p.

AVAILABILITY: Sale, $6.12. Virginia Vocational Curriculum and Resource Center, 2200 Mountain Road, Glen Allen, VA 23060. (804) 262-7439.

TITLE: **"Technology Education in Oklahoma: A Plan for Improvement."**

AUTHOR: Stacy, Roger.

JOURNAL: *Technology Teacher*, v46 n3 p7-12 Dec 1986.

ANNOTATION: Describes development of a 3-year technology education program being implemented in Oklahoma. The major categories of study are (1) communication, (2) construction, (3) manufacturing, and (4) transportation. (CH)

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TITLE: ***Technology Education: Learning How to Learn in a Technological World. Report of the Commission on Technology Education for the State of New Jersey, 1987.***

DATE: 1987.

DEVELOPER: New Jersey State Dept. of Education, Trenton. Div. of Vocational Education.

ANNOTATION: During the past several years, topics related to technological literacy and technology education have received increasing attention by policymakers at all levels of government. This report documents the attainment of the initial objectives set forth in an earlier report of the Commission, which was issued in 1985. A major section of this document deals with the transition to technology education, answering questions about technology, technology education, goals for technology education, and teaching methods in technology education. A second major section addresses technology in education for New Jersey, noting the major emphasis on awareness of technology education at the elementary school level and the secondary level approaches to exploring, studying, and applying technology. Also included in the report are the Commission's recommendations, which are directed toward the commission itself, professionals involved in technology education, the New Jersey Department of Education, business and industry, and higher education institutes. (TW).

FORMAT: Legal Material; Project Description; 33p.

AVAILABILITY: For a microfiche copy of this document order ED288734 from FEIS.

TITLE: ***Technology Education Program of Studies.***

DATE: 1986.

ANNOTATION: Designed for dual informational/promotional use by administrators, teachers, and guidance counselors to support implementation of approved competency-based programs and courses in technology education. In addition to an overview, the guide includes descriptions of each program and a task list and resources for each course.

FORMAT: Administrative Manual; Task Analysis; 89p.

AVAILABILITY: Sale, $5.04. Virginia Vocational Curriculum and Resource Center. 2200 Mountain Road Glen Allen, VA 23060. (804) 262-7439.

SERIES: **Technology Education Software.**

TITLE: ***Famous Technologists and Their Inventions.***

Social Components of Technology.

Technical Components of Technology.

DATE: 1987.

ANNOTATION: A set of data diskettes designed to assist the technology education teacher in meeting the new essential elements. Each diskette includes a series of data files that have an information section with questions to be answered by the student and support documentation for the teacher.

SYS REQ: Microcomputer Program; Apple II series with AppleWorks software; 4 disks.

AVAILABILITY: Sale, $50.00. Extension Instruction and Materials Center. PO Box 7218. Austin, TX 78713-7218. (512) 471-7716.

TITLE: **"Technology Education: Subject- or Student-centered."**

AUTHOR: Moss, Jerome, Jr.

JOURNAL: *Journal of Epsilon Pi Tau;* v13 n1 p40–43 Win–Spr 1987.

ANNOTATION: The author urges academic leaders to consider a change in strategy regarding the technology education curriculum. He suggests that leaders make an effort to clarify the central purpose(s) of technology education and then to develop a student-centered curriculum. (CH).

TITLE: **"The Technology Education Thrust: Its Status and Opportunities."**

AUTHOR: Starkweather, Kendall N.

JOURNAL: *Technology Teacher;* v46 n1 p3–8 Sep–Oct 1986.

ANNOTATION: Provides an overview of technology education. Defines the field, identifies opportunities within the field, and comments on the role of the International Technology Education Association. (CH).

TITLE: **"Technology Education: Where Does the Funding Come From?"**

AUTHOR: Almeida, Chris; And Others.

JOURNAL: *Technology Teacher;* v44 n6 p4–7 Mar 1985.

ANNOTATION: Four leaders in state industrial arts answer questions about funding for industrial arts/technology education programs. Questions involve best sources of funding, setting up foundations for receiving funding, receiving funding through corporate grants and private foundations, and suggestions for industrial arts/technology education professionals. (CT).

TITLE: **"Technology, Industry, Skills, and Education."**

AUTHOR: Swyt, Dennis A.

JOURNAL: *Technology Teacher;* v45 n7 p5–9 Apr 1986.

ANNOTATION: The author discusses changes in technology and education, the nature of technology, the creation of technology, technology's assimilation by industry, the workers skilled in the technology, education in skills in technology, technology of the factory of the future, and the TIPE System (Technology, Industry, Professionals, Education). (CT).

TITLE: **"Technology Literacy as a Major Thrust for Technology Education."**

AUTHOR: Maley, Donald.

JOURNAL: *Journal of Epsilon Pi Tau;* v13 n1 p44–49 Win–Spr 1987.

ANNOTATION: Discusses (1) the nature and role of technology, (2) technology education and general education, (3) technological literacy and general education, and (4) technology and teacher education. Integrates these issues and supports technology as a necessary component of general education. (CH).

TITLE: **"Technology Programs: Ann Arbor, Michigan."**

AUTHOR: Ball, Ed.

JOURNAL: *Technology Teacher*, v46 n2 p9-13 Nov 1986.

ANNOTATION: This article outlines suggested actions, activities, and the type of personal dedication necessary to begin a total technology education curriculum in a school district. It discusses program development, gathering information, getting funding, proposing the change to the administration, and the teacher's role. (CT)

TITLE: **"Technology Programs: Chicago, Illinois."**

AUTHOR: Tobin, Harry

JOURNAL: *Technology Teacher*, v46 n4 p7-11 Jan 1987.

ANNOTATION: A model technology education program, implemented in the Chicago public schools, featured public and private sector cooperation. Successful program elements included museum choice programs, teacher retraining and mini-conventions, and summer orientation sessions. (CH)

TITLE: ***Technology Systems.***

DATE: 1988.

ANNOTATION: Student laboratory activities that introduce students to the concepts of technology. The laboratory activities allow the student to explore the resources, processes, management, impacts, and products of communication, energy and production technology.

FORMAT: Teaching Guide.

AVAILABILITY: Sale, $18.00. Extension Instruction and Materials Center, PO Box 7218, Austin, TX 78713-7218. (512) 471-7716.

TITLE: **"Three Scenarios on the Technology Education Base."**

AUTHOR: Lauda, Donald

JOURNAL: *Journal of Epsilon Pi Tau*, v9 n2 p7-14 Fall 1983.

ANNOTATION: Outlines a K-12 scope and sequence model for technology education that has as its integrating thread the concept that technology is fundamental to human survival and that its study leads to an understanding of culture. (SK)

TITLE: **"Transition to Technology Education: A Major Shift in the Secondary Curriculum."**

AUTHOR: Koppel, Irene; Miller, Peter.

JOURNAL: *Educational Leadership*, v44 n4 p77-79 Dec-Jan 1986-87.

ANNOTATION: Technology education is a new direction in education and requires a shift to a more universal and process-oriented educational approach. The Bernard High School (NJ) has replaced its industrial arts program with a totally articulated technology education program that became effective in fall 1987. (MD)

TITLE: **"A Vision of Computers in Technology Education."**

AUTHOR: LaPorte, James E.

JOURNAL: *Technology Teacher*, v46 n8 p5-7 May-Jun 1987.

ANNOTATION: The author describes an imaginary school that uses all the current technology in its technology education program. He concludes by stating that technology educators should be leaders in using such machinery and must work to obtain such resources for their programs. (CH)

TITLE: ***Vocational Core Curriculum Field Trial.***

DATE: 1986.

DEVELOPER: Logan School District, 101 West Center, Logan, UT 84321. (801) 752-1811.

ANNOTATION: A course will be developed that includes applications of technology associated with industrial skills. The program to be field-tested will include activities with computers, lasers, robotics, optics, solar and wind power, diesel power, word processing, job assessment, and free enterprise-economics settings. Students will identify potential wage earner resources and personal strengths. The program will affect students' attitudes as they develop educational plans, prepare for work, and enter work roles.

FORMAT: Project Description.

TITLE: ***Vocational/Technical Education for the 21st Century.***

DATE: 1987.

AUTHOR: Houben, Ir. J. W. M. A.; Verbunt, Jan A.

ANNOTATION: Teacher education and teachers, particularly vocational and technical education teachers, must keep abreast of the trends and changes in the work force and employment needs around the world. Education must be geared toward helping individuals to explore their options and to continue learning throughout their life span. This flexibility is needed as the world becomes increasingly technological and concepts learned today become obsolete tomorrow. Four major changes that may affect vocational education and training involve (1) the invalid expectation of continuous lifetime employment of all workers; (2) the need for a better theoretical understanding in certain fields; (3) a greater emphasis on human and social factors; and (4) informed technical education. Technology education can help pupils fulfill their individual potential, raise overall national levels of educational attainment, bring about greater equality of educational opportunity, and foster social and cultural cohesion. Basic conditions for such education includes common standards for technology as an educational subject, standardization in electronic hardware and software, willingness of industrialized nations to assist developing nations, and cooperation between science- and work-related disciplines for the development of educational programs. (CB).

FORMAT: Conference Paper; Project Description; 21p.

AVAILABILITY: For a microfiche copy of this document order ED287806 from FEIS.

TITLE: **"What Business Are We Really In? The Dominant Leadership Question for Technology Education."**

AUTHOR: Wenig, Robert E.

JOURNAL: *Technology Teacher*, v45 n8 p3-5 May-Jun 1986

ANNOTATION: Discusses two questions: (1) Are we in the technology business, where we spend exorbitant time and energy debating which content and what method? and (2) Should we be in the business of serving all youth in a special way so they can grow, develop, and function successfully in a rapidly advancing technological world? (CT)

TITLE: ***Directory of Curriculum Guides and Other Key Resources.***

DATE: 1985

AUTHOR: Squier, Terry, Ed.

FORMAT: Reference Material, 36 pp., $5.50.

AVAILABILITY: International Technology Education Association, 1914 Association Drive, Reston, VA 22091, (703) 860-2100.

TITLE: ***Discovering Technology: Communication.***

DATE: 1986.

AUTHOR: Jones, Ronald E.; Robb, Janet L.

FORMAT: Study Guide/Workbook, $6.30; Teacher Guide, $3.90; Text, $16.50.

AVAILABILITY: Harcourt Brace Jovanovich, Southeastern Region, 7401 Dowden Road, Orlando, FL 32812, (407) 826-5070.

TITLE: ***Discovering Technology: Energy, Power, and Transportation.***

DATE: 1987.

AUTHOR: Karwatka, Dennis; Kozak, Michael.

FORMAT: Study Guide/Workbook, $6.30; Teacher Guide, $3.90; Text, $16.50.

AVAILABILITY: Harcourt Brace Jovanovich, Southeastern Region, 7401 Dowden Road, Orlando, FL 32812, (407) 826-5070.

TITLE: ***Exploring Communications.***

DATE: 1987.

AUTHOR: Seymour, Richard D.; Ritz, John M.; Cloghessy, Florence A.

FORMAT: Study Guide/Workbook, $3.30; Teacher Guide, $3; Text, 288 pp., $12.30.

AVAILABILITY: Goodheart-Willcox, 123 W. Taft Drive, South Holland, IL 60473-9977, (800) 323-0440.

TITLE: ***Exploring Construction.***

DATE: 1985.

AUTHOR: Henak, Richard M.

FORMAT: Activity Packet, $6; Study Guide/Workbook, $3.30; Teacher Guide, $3; Text, 320 pp., $12.30.

AVAILABILITY: Goodheart-Willcox, 123 W. Taft Drive, South Holland, IL 60473-9977, (800) 323-0440.

TITLE: ***Exploring Manufacturing.***

DATE: 1985.

AUTHOR: Wright, R. Thomas.

FORMAT: Activity Packet, $6; Study Guide/Workbook, $3.30; Teacher Guide, $3; Text, 272 pp., $12.30.

AVAILABILITY: Goodheart-Willcox, 123 W. Taft Drive, South Holland, IL 60473-9977, (800) 323-0440.

TITLE: ***Exploring Production.***

DATE: 1985.

AUTHOR: Wright, R. Thomas; Henak, Richard M.

FORMAT: Activity Packet, $9; Study Guide/Workbook, $3.96; Teacher Guide, $3.60; Text, 544 pp., $14.97.

AVAILABILITY: Goodheart-Willcox, 123 W. Taft Drive, South Holland, IL 60473-9977, (800) 323-0440.

TITLE: ***Exploring Technology (2nd ed.).***

DATE: 1988.

AUTHOR: Bame, E. Allen; Cummings, Paul.

FORMAT: Study Guide/Workbook, 168 pp., $10.95; Teacher Guide, 180 pp., $13.25; Text, 376 pp., $22.95.

AVAILABILITY: Davis Publications, 50 Portland Street, Worcester, MA 01698, (800) 533-2847.

TITLE: ***Living with Technology.***

DATE: 1988.

AUTHOR: Hacker, Michael; Barden, Robert.

FORMAT: Teacher Guide, $12; Text, 544 pp., $17.96.

AVAILABILITY: Delmar Publishers, 2 Computer Drive W., Box 15015, Albany, NY 12212-5015, (800) 347-7707.

TITLE: ***One Step Beyond.***

DATE: 1986.

FORMAT: Videotape, 13 min., VHS, $39.95.

NOTE: Presents the Explorations in Technology program offered at the Pittsburg Middle School in Pittsburg, Kansas.

AVAILABILITY: Pitsco, PO Box 1328, Pittsburg, KS 66762, (800) 835-0686.

TITLE: ***Research and Experimentation in Technology Education.***

DATE: 1986.

AUTHOR: Maley, Donald.

FORMAT: Reference Material, 24 pp., $6.50.

AVAILABILITY: International Technology Education Association, 1914 Association Drive, Reston, VA 22091, (703) 860-2100.

TITLE: ***Resources in Technology,* Volumes I and II.**

DATE: 1984–1985.

AUTHOR: McCrory, David L.; Maughan, George R.

FORMAT: Teacher Guides, 64 pp. each, $7.50 each.

NOTE: Volume III is available from the International Technology Education Association for $7.50.

AVAILABILITY: Davis Publications, 50 Portland Street, Worcester, MA 01698, (800) 533-2847.

TITLE: ***Special Needs Guide for Technology Education (rev. ed.).***

DATE: 1986.

AUTHOR: Buffer, James J., Jr.; Scott, Michael L.

FORMAT: Teacher Guide, 36 pp., $6.50.

AVAILABILITY: International Technology Education Association, 1914 Association Drive, Reston, VA 22091, (703) 860-2100.

SERIES: **Technology Activity Guides.**

TITLE: ***Activity Guide I.***

Activity Guide 2.

DATE: 1987.

AUTHOR: Listar, Glenn S.

FORMAT: Study Guides/Workbooks, 232–288 pp., $6.95–$7.50 each; Teacher Guides, $3.75–4.50.

AVAILABILITY: Delmar Publishers. 2 Computer Drive W, Box 15015. Albany, NY 12212-5015. (800) 347-7707.

SERIES: **Technology Activity Series.**

TITLE: ***Activities in Communication Technology.***

Activities in Construction Technology.

Activities in Manufacturing Technology.

Activities in Transportation, Energy, and Power Technology.

DATE: 1988.

AUTHOR: Harms, Henry.

FORMAT: Study Guides/Workbooks, 32 pp. each, $19.95 for a package of 10.

AVAILABILITY: Delmar Publishers. 2 Computer Drive W, Box 15015. Albany, NY 12212-5015. (800) 347-7707.

TITLE: ***Technology and You.***

DATE: 1987.

AUTHOR: Goetsch, David L.; Nelson, John A.

FORMAT: Teacher Guide, $6; Text, 384 pp., $17.21.

AVAILABILITY: Delmar Publishers. 2 Computer Drive W, Box 15015. Albany, NY 12212-5015. (800) 347-7707.

TITLE: ***Technology for Tomorrow.***

DATE: 1985.

AUTHOR: Williams, Charles F.; Badrkham, Kamiran S.; Daggett, Willard R.

FORMAT: Study Guide/Workbook, $3; Teacher Guide, free to instructor with text; Test, $0.95; Text, 406 pp., $12.95.

AVAILABILITY: South-Western Publishing Company. 5101 Madison Road. Cincinnati, OH 45227. (800) 543-1985.

TITLE: ***Technology in Your World.***

DATE: 1987.

AUTHOR: Hacker, Michael; Barden, Robert.

FORMAT: Teacher Guide, $6.75; Text, 427 pp., $17.21.

AVAILABILITY: Delmar Publishers. 2 Computer Drive W, Box 15015. Albany, NY 12212-5015. (800) 347-7707.

TITLE: ***Technology Today and Tomorrow.***

DATE: 1988.

AUTHOR: Fales, James F.; Kuetemeyer, Vincent F.; Brusic, Sharon A.

FORMAT: Study Guide/Workbook, $5.55; Teacher Guide, $24.84; Teacher's Annotated Edition of Text, $21.75; Text, 448 pp., $17.40.

AVAILABILITY: Glencoe Publishing Company. Front and Brown Streets. Riverside, NJ 08075-1197. (800) 257-5755.

SERIES: **You, Me, and Technology.**

TITLE: ***A Changing Romance: Americans and Wheels.***

China, Japan, and the West.

Communications: The Expanding World.

Decisions, Decisions, Decisions.

Energy for Societies.

Feeding the World.

Health and Technologies.

Living with Technology.

Technology Spiral.

DATE: 1983–1987.

FORMAT: Videotapes, 20 min. each, 1/2-inch Beta or VHS, 3/4-inch U-matic, 7 day rental, $30 each, purchase: $150 each, quantity discounts available when purchasing 2 or more.

AVAILABILITY: Agency for Instructional Technology. Box A. Bloomington, IN 47402-0120. (800) 457-4509.

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